DRISTEEM®
The humidification experts

Vapormist®

Electric-to-Steam
Humidification System

PRODUCT CATALOG

Figure 2-1:
Matching dispersion cabinet

DRI-STEEM® offers two dispersion units that match the Vapormist cabinet: the SDU-I and the SDU-E. The SDU-I (Steam Distribution Unit Internal Absorption) disperses steam without a visible vapor trail. This option is ideal for spaces where the presence of vapor creates either a visual problem or a condensation risk. For larger capacities, choose the SDU-E (Space Distribution Unit External Absorption). Both SDU models offer extremely quiet, reliable steam distribution.

Installs in a snap!

The Vapormist® humidifier is a compact, cabinet-style humidifier with a history of reliably and efficiently providing humidification steam.

Installation is a snap — just attach the frame to a supporting structure and connect the services. Maintenance is easy, too. Remove the resin cover and all components are accessible for service. The permanent, stainless steel vaporizing chamber and the use of softened water eliminate the need for service for up to three years. Its non-corrosive enclosure will never rust, and years later will look as good as it did out of the box.

Vapor-logic3 control

Vapormist features Vapor-logic®3, DRI-STEEM's state-of-the-art controller. Vapor-logic3 offers precise and complete humidifier control, and is so easy to use it practically runs itself!

On-off, TP or SSR control. Choose from standard modulation for superior control in most environments, or add the solid state relay (SSR) option to achieve even tighter control.

Superior control capabilities. Key features of this modular controller include:

- **PID control** provides accurate, responsive, adjustable RH control
- **The temperature sensor** enables the controller to hold water at a preset temperature allowing rapid response to a call for humidity
- **Data reports** help you monitor humidifier performance
- **Backlit display** is easy to read
- **Menus are intuitive** and easy to navigate
- **Real-time clock** allows time-stamped alarm tracking and the ability to program draining for preset times
- **LonTalk® interoperability** allows communication with a LonTalk building automation system
- **Multiple-humidifier control** allows control of up to 16 humidifiers with one controller

Aesthetically pleasing

Not only does the Vapormist work well, it looks great too! It has an attractive resin cover, and the Vapor-logic3 keypad, which mounts directly on the humidifier, adds to the polished look and makes the Vapormist a perfect choice for finished-space applications.

Easy to maintain

Even the best humidifiers require periodic maintenance to ensure optimal performance, so we've made it easy for you. The Vapormist cover is completely removable, giving you easy access to the unit for all maintenance procedures. Our redesigned tank keeps maintenance to a minimum and offers the option of localized cleaning or tank removal for remote cleaning.

Vapormist features

Proven performance

- Control to ±3% RH
- Electronically monitored water level ensures safe and reliable operation
- Diagnostic test at unit start-up verifies system performance

Application flexibility

- Capacity range up to 102 lbs/hr (46 kg/h) for each unit
- Capacity up to 1632 lbs/hr (734 kg/h) using multiple-humidifier control option (link up to 16 humidifiers)
- Supports all types of water: tap, softened, reverse osmosis or deionized; easy to field-convert if water type changes
- Attractive enclosure suitable for finished spaces
- Disperses steam through ductwork using single or multiple tubes, Rapid-sorb® or Ultra-sorb® dispersion units, or disperses steam directly into a space using Space Distribution Units (SDU-E or SDU-I), enclosed fan units that mount on top of the Vapormist or remotely within a room
- The Space Distribution Unit Internal Absorption (SDU-I) disperses humidity with no visible vapor trail, making it ideal for use in finished spaces

Minimal maintenance

- Removable cover allows easy access to evaporating chamber and electrical connections
- Use of softened water significantly reduces maintenance requirements
- End-of-season autodrain minimizes microbial growth
- User-adjustable water skimmer skims off floating minerals
- Controller-operated drain and flush removes precipitated minerals from evaporating chamber
- Constant thermal expansion and contraction of heating elements continuously sheds mineral buildup
- Three levels of heater protection prevent premature failure
- Easy water level control access

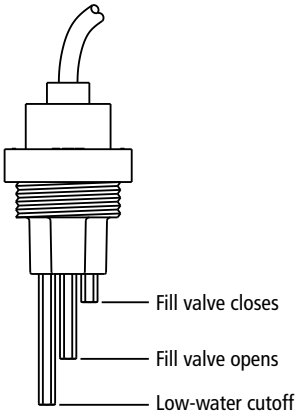
Advanced control with Vapor-logic3

- User-programmable for on-off, time-proportioning, or solid state relay (SSR) control
- Easy-to-use keypad displays current conditions, alarm log, graphed data, and message reminder for tank cleaning based on water usage
- Temperature sensor enables freeze-protection and allows rapid warm-up
- Years of proven performance ensures trouble-free operation
- Cold-snap offset option prevents window condensation
- VAV control option
- Accepts all input signals
- Interoperable with any LonTalk network (not available with multiple-humidifier control)

Guaranteed absorption

- Cataloged and guaranteed steam absorption distances
- Unique tubelets in dispersion tubes eliminate condensate drips
- Published absorption tables for sizing and selecting the correct dispersion option
- Dri-calc® software available for computer calculation of absorption distances and system selection

Figure 4-1:
Water level control for standard water systems



Systems using tap or softened water control water levels electronically using a three-rod probe. The controller responds with the above actions when the water level reaches each rod.

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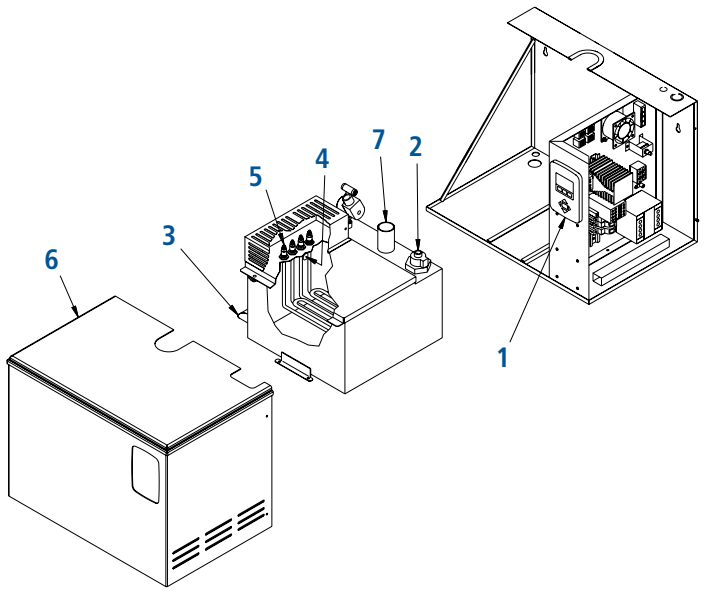
Figure 4-2:
Vapormist components



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1. Control cabinet

The Vapor-logic3 controller controls all functions of the humidifier. See Page 7 for more information.

2. Water level control

Tap or softened water systems control water levels electronically using a three-rod probe (Figure 4-1). DI/RO water systems control water levels using a float valve (shown on next page) and low-water cutoff switch.

3. Drain

Duration and frequency of draining can be adjusted through the keypad. To avoid possible stagnant water and microbial growth, the humidifier automatically drains if there is no call for humidity after a user-defined time period (72 hour default).

4. Water skimmer/overflow port

In standard water systems, the water skimmer reduces surface minerals in the evaporating chamber. Skimming occurs each time the humidifier fills. The skim time duration is user-adjustable. DI/RO water systems do not require skimming. In DI/RO systems, the skimmer port functions as an overflow port.

5. Heating elements

Low-watt-density Incoloy-sheathed heating elements ensure operation for many seasons. Constant expansion and contraction of heating elements sheds mineral scale. In the unlikely event of heater failure, heating elements can be removed easily.

6. Removable cover

A removable cover allows easy access to the evaporating chamber, electrical connections, and drain.

7. Steam outlet

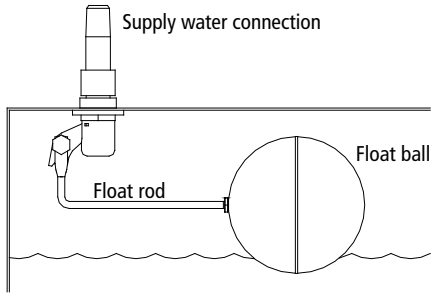
Steam generated in the unit rises and exits through the steam outlet and travels to the dispersion unit through either vapor hose or piping.

8. Temperature sensor (not shown)

Mounted on the evaporating chamber, this sensor enables:

- Over-temperature protection
- Freeze protection
- Preheating, allowing rapid response to a call for humidity

Figure 5-1:
Water level control for DI/RO water systems



Systems using deionized (DI) water or water that has been treated through reverse osmosis (RO) control water levels using a float valve and low water cutoff switch.

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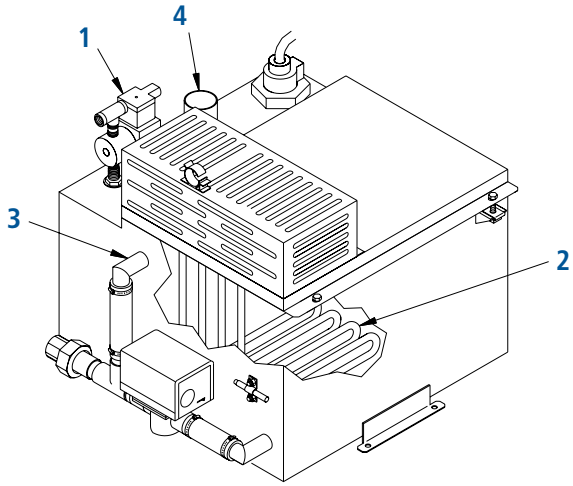
Vapormist principle of operation

Figure 6-1:
Vapormist principle of operation

Standard water system (shown with cover removed)



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1. When the system is first activated, the fill valve opens and the evaporating chamber fills with water to the operating level.
2. On a call for humidity, the heating elements are energized, causing the water to boil. The fill valve opens and closes as needed to maintain the operating water level.
3. During refill in standard water systems, a portion of the surface water is skimmed off, carrying away precipitated minerals. (DI/RO systems do not require skimming.)
4. Steam created in the evaporating chamber flows through vapor hose or piping to the dispersion assembly, where it is discharged into the airstream.

Accurate, responsive microprocessor control

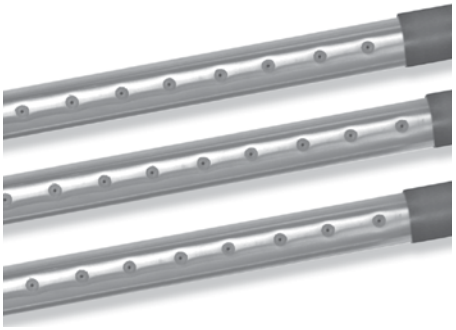
Vapor-logic3 provides exceptional functionality, ease of use, and accurate RH control. Standard on all Vapormist models, this controller features:

- **Real-time clock** allows time-stamped alarm tracking and three ways to program drain and flush cycles:
  1. Usage (unit drains after a set number of pounds of water have cycled through)
  2. Usage and time (unit drains at a preset time after a set number of pounds of water have cycled through)
  3. At a preset time
- **Keypad** has a backlit display and features:
  - Intuitive menu-driven access to all system functions
  - Default screen for quick viewing of system status and set points
  - Data reports to track performance and efficiency
  - System diagnostics and alarm tracking for troubleshooting
  - Password protection of setup parameters
  - Easy viewing in low-light environments
  - Three ways to mount the keypad:
    1. Mounted on the Vapormist cabinet
    2. Hand-held; shipped with a 5' (1.5 m) cable
    3. Mounted remotely using a standard telephone plate. The keypad can be located up to 500' (152 m; the maximum length of the keypad cable) from the Vapormist.
- **Tank temperature sensor,** mounted on the evaporating chamber, allows Vapor-logic3 to provide:
  - Over-temperature protection
  - Freeze protection
  - Tank preheating, allowing rapid response to a call for humidity
- **PID control** provides accurate, responsive, and adjustable relative humidity (RH) control.
- **LonTalk interoperability** allows communication with a LonTalk building automation system using Standard Network Variable Types (SNVTs). Note that LonTalk interoperability with a building automation system is not available when using multiple humidifier control.
- **Multiple-humidifier control** allows control of up to 16 humidifiers with one controller. The primary benefit of multiple-humidifier control is expanded capacity without giving up consistent humidity control. The Vapor-logic3 controller anticipates increased demand and preheats tanks as needed to provide a rapid response to demand changes.

Figure 7-1:
Vapor-logic3 keypad

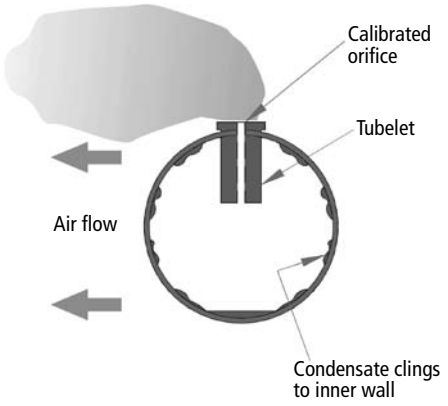
The Vapor-logic3 keypad is easy to use and read, and it provides access to all humidifier functions.

Figure 8-1:
DRI-STEEM dispersion tubes



DRI-STEEM's dispersion tubes are fitted with one or two rows of closely-spaced thermal-resin tubelets to evenly disperse steam across the airstream.

Figure 8-2:
DRI-STEEM tubelets



DRI-STEEM's unique tubelets extend into the center of the tube so only the driest steam is discharged into the air.

150-3bw

Guaranteed absorption distances

Using data collected in our on-site test lab, we have developed guaranteed steam absorption distances. Performance charts allow you to confidently choose equipment that will accommodate any application.

Dry steam

Adding humidification to an airstream without creating wetness in the duct system is critical for the maintenance of a healthy environment. Wet areas in ducts are a threat to the health of building occupants since they moisten dust on duct floors, creating ideal breeding grounds for disease-producing microbes. In addition, water accumulating in ducts can drip and cause building damage.

Steam escapes drip-free through tubelets

All DRI-STEEM evaporative dispersion tube units discharge steam through thermal-resin tubelets fitted into dispersion tubes. These tubelets extend from the center of the tube, where the steam is driest, through the tube wall, to the duct airstream. In essence, the tubelets provide a temperature-neutral escape tunnel for steam, allowing steam to cross over lower-temperature metal without condensing or dripping. Each tubelet contains a calibrated orifice sized for steam capacity. These tubelets are a DRI-STEEM exclusive, and are essential for drip-free steam dispersion.

Condensate drains away

Some condensation is inevitable in steam dispersion, but through careful design, condensate can be controlled and directed away from where it can cause problems.

For example, the Ultra-sorb dispersion panel has a unique double-header design that uses gravity to remove condensate. Steam enters the supply header, escapes through the tubelets, and condensate drains out the return header. In the Rapid-sorb dispersion unit, steam enters one end of a single bottom header with velocities carefully managed so that condensate is not pushed out into the air along with the steam, but rather drains out at the opposite end of the header.

For more information about dispersion units, see Pages 9-10 and 16-23.

Space Distribution Units

Space Distribution Units (SDUs), designed for use in finished spaces, disperse steam into large open spaces and are particularly useful where there are no air-handling ducts.

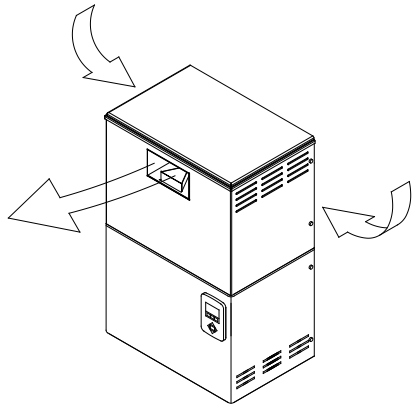
There are two SDU models: SDU-I (steam absorbs within the enclosure with no visible vapor) and SDU-E (visible steam absorbs outside the enclosure).

The SDU-I fan mixes room air and steam to ensure complete absorption before discharge as humidified air. The SDU-I is available for models VM-2 through VM-8, and all VM-10 models except those using 240V, three-phase power with SSR control. **Note:** Maximum ambient RH must not exceed 45% for the SDU-I to operate properly.

The Space Distribution Unit External Absorption (SDU-E) is designed for higher capacity dispersion. The SDU-E is available for all models except those models using 240V/480V/600V/three-phase power with the SSR control option and drawing more than 21.7 amps.

For more information about SDUs, see Page 22 and 23.

Figure 9-1:
SDU-E



SDU shown mounted directly above the Vapormist

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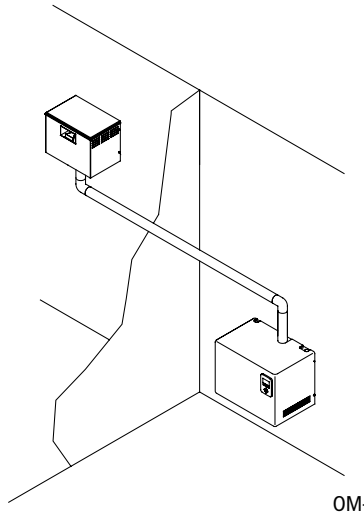
Figure 9-2:
SDU mounted remotely



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Vapormist steam dispersion options

Figure 10-1:
Ultra-sorb dispersion

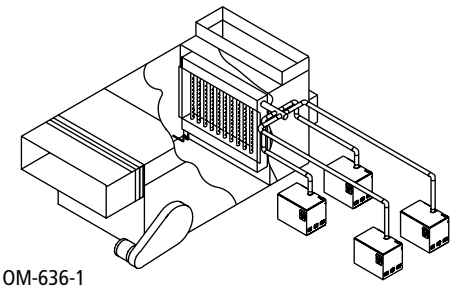

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Figure 10-2:
Rapid-sorb dispersion

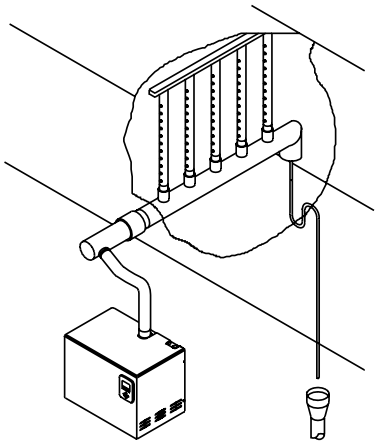

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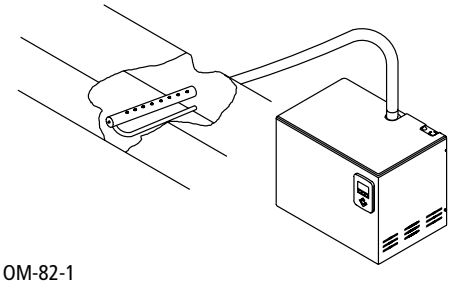
Figure 10-3:
Single- or multiple-tube dispersion



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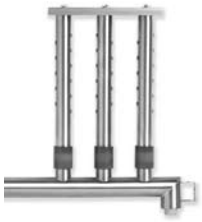
Ultra-sorb

The multiple-tube Ultra-sorb allows virtually instantaneous steam absorption. The factory-assembled panel can be installed within inches upstream of dampers, coils or elbows without dripping.

The Ultra-sorb's steam downflow design allows for high capacity dispersion. The unit is preassembled at the factory within a mounting frame, and installs easily. Simply mount the panel and complete the steam and condensate connections (see Pages 16-18).

Rapid-sorb



Rapid-sorb has a single header design with steam flowing up from a bottom header. This design is an excellent choice for medium capacity systems where multiple tubes are needed to handle the load and/or when non-wetting distance is limited. Rapid-sorbs are assembled on-site (see Pages 16 and 19-20).

Reduce wasted energy by up to 85% with High-efficiency tubes

DRI-STEEM's PVDF insulated dispersion tubes reduce wasted energy by up to 85% while significantly reducing airstream heat gain and dispersion-generated condensate production. Insulating the dispersion tubes makes more steam available for dispersion, and less is lost to condensate. High-efficiency dispersion tubes are an available option for Ultra-sorb and Rapid-sorb dispersion assemblies. For more information, see the High-efficieny Tube option brochure, available at www.dristeem.com

Single or multiple tubes

Single or multiple dispersion tubes are an excellent choice for lower capacity applications or where there is room for a longer non-wetting distance (see Pages 16 and 21).

Vapormist specifications

Table 11-1:
Vapormist specifications, capacities, and weights

Model	Maximum steam capacity		Current draw (amps)									Weights ‡			
			Single-phase					Three-phase				Shipping		Operating	
kW	lbs/hr	kg/h	120V	208V*	240V*	480V†	600V†	208V*	240V†	480V†	600V†	lbs	kg	lbs	kg
2	6	2.7	16.7	9.6	8.3	4.2	3.3	—	—	—	—	80	36	95	43
4	12	5.4	33.3	19.2	16.7	8.3	6.7	16.7**	14.4**	7.2**	5.8**	80	36	95	43
6	18	8.2	—	28.8	25.0	12.5	10.0	25.0**	21.7**	10.8**	8.7**	88	40	122	55
8	24	10.9	—	38.5	33.3	16.7	13.3	33.3**	28.9**	14.4**	11.5**	88	40	122	55
10	30	13.6	—	—	41.7	20.8	16.7	29.1**	25.3**	12.6**	10.1**	93	42	139	63
12	36	16.3	—	—	—	25.0	20.0	33.3	28.9	14.4	11.5	93	42	139	63
14	42	19.1	—	—	—	29.2	23.3	38.9	33.7	16.8	13.5	93	42	139	63
16	48	21.8	—	—	—	33.3	26.7	44.4	38.5	19.2	15.4	93	42	139	63
21	63	28.6	—	—	—	43.8	35.0	—	—	25.3	20.2	95	43	152	69
25	75	34.0	—	—	—	—	41.7	—	—	30.1	24.1	95	43	152	69
30	90	40.9	—	—	—	—	—	—	—	36.1	28.9	101	46	156	71
34	102	46.3	—	—	—	—	—	—	—	40.9	32.7	101	46	156	71

Notes:
* On 208V/240V/single-phase/three-wire and on 208V/three-phase/four-wire supplies, the neutral line provides a separate 120V circuit for the SDU fan unit.
** For wire sizing, the highest leg draw is shown due to current imbalance.
† Add the following to Vapormist weights if using an SDU option (these weights are for additional control components housed within the Vapormist cabinet):
– SDU-I: 12 lbs (5.5 kg)
– SDU-E: 9 lbs (4 kg)
See the SDU weights Table 11-2 below for SDU weights (shipped separately).
‡ Add the following if using the SSR option:
– For single-phase or three-phase models drawing less than 21.7 amps, add 2 lbs (1 kg)
– For three-phase models drawing more than 21.7 amps, add 4 lbs (2 kg)
All Vapormists operate at 50/60 Hz.

Table 11-2:
Space Distribution Unit specifications**

SDU model	Maximum capacity		Shipping weight		Amps at 120V (50/60 Hz)	Horse-power	cfm	m^3/s	dB*
	lbs/hr	kg/h	lbs	kg					
SDU-E	102	46.3	61	28	2.07	1/8	545	0.26	64
SDU-I	30	13.6	68	31	3.20	1/5	760	0.36	58

Notes:
* Measurement taken 6.5' (2 m) in front of SDU cabinet.
** For visible vapor to be absorbed completely within the SDU-I unit before being discharged as humidified air, room air must be 45% RH or less. Trying to maintain greater than 45% RH will cause visible vapor and potential for moisture collection on the discharge grille.

Notes about SDUs (Space Distribution Units):

- The SDU-I is available for models VM-2 through VM-8, and all VM-10 models except those using 240V, three-phase power with SSR control.
- The SDU-E is available for all Vapormist models except those models using 240V/480V/600V/three-phase power with the SSR control option and drawing more than 21.7 amps.
- SDUs ship separately from the Vapormist.

Figure 12-1:
Dimensions

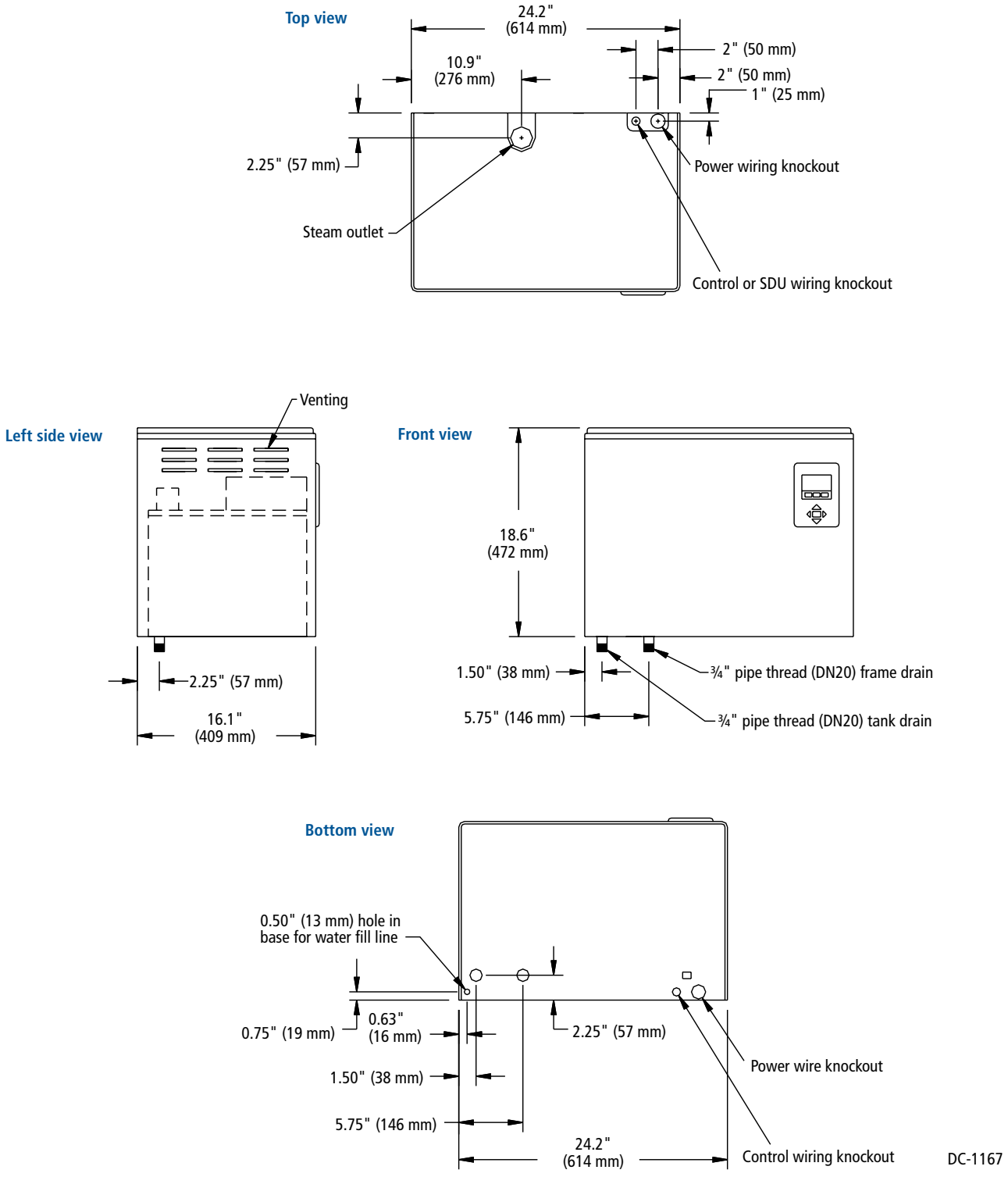


Figure 13-1:
Vapormist with an SDU-I

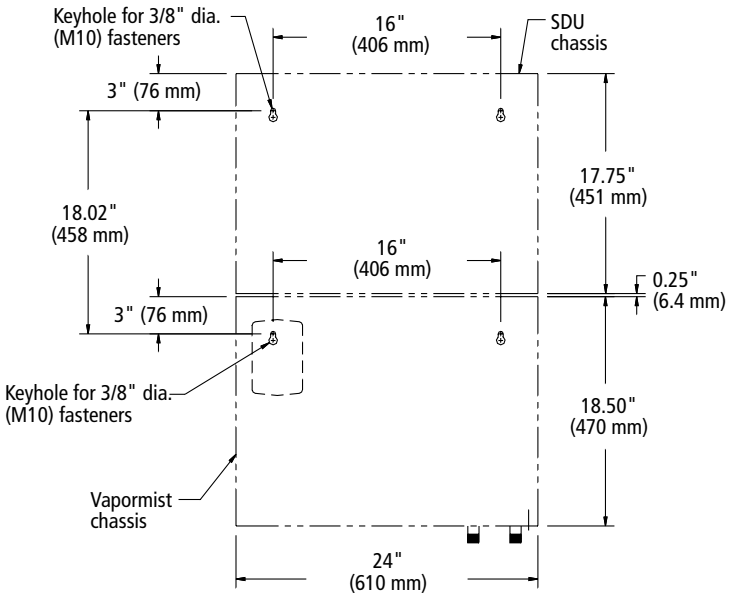


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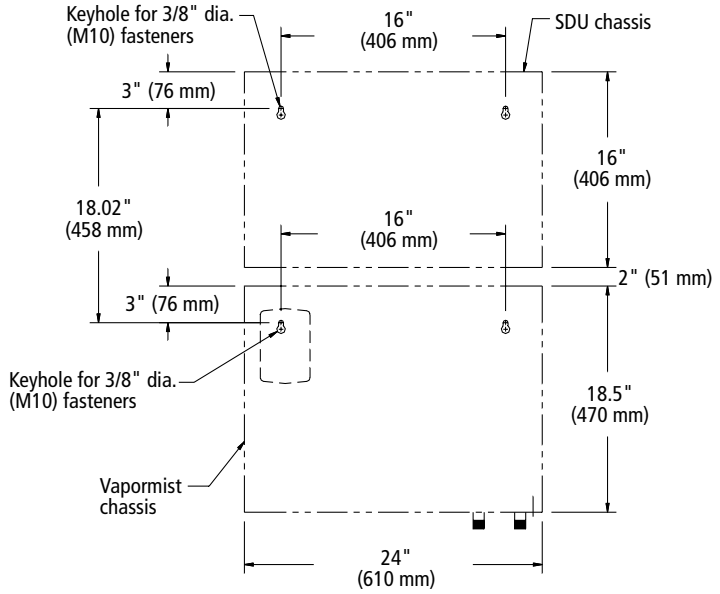
Figure 13-2:
Vapormist with an SDU-E



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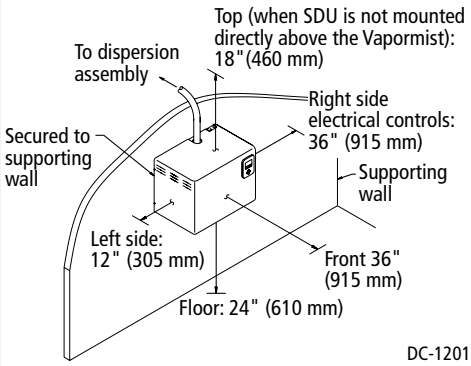
Vapormist and SDU mounting

Mount the Vapormist and SDU to wall studs using the template on the box. Two lag bolts are provided with each unit.

SDUs can be mounted directly above the Vapormist cabinet (as shown at left) or remotely. Maintain clearances as shown below. Provide at least 6" (152 mm) clearance on each side of an SDU when mounted remotely. For SDU-E clearances see also Table 22-1: SDU-E minimum non-wetting distances.

Note that the SDU-E dispersion box requires an installed condensate drain line. See Page 23 for more information.

Figure 13-3:
Clearance recommendations



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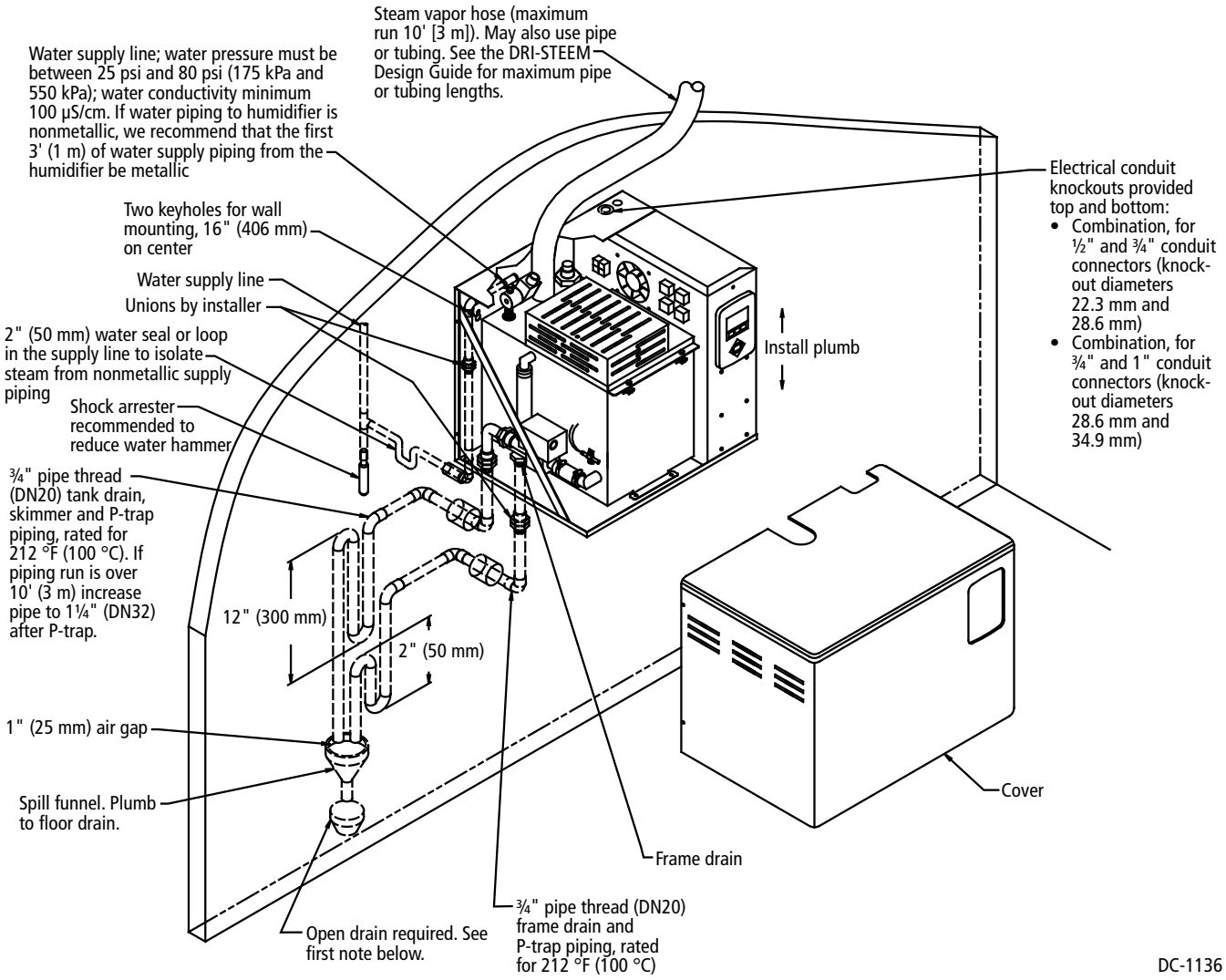
Vapormist piping, standard water models

Figure 14-1:
Vapormist (standard water models) field piping overview

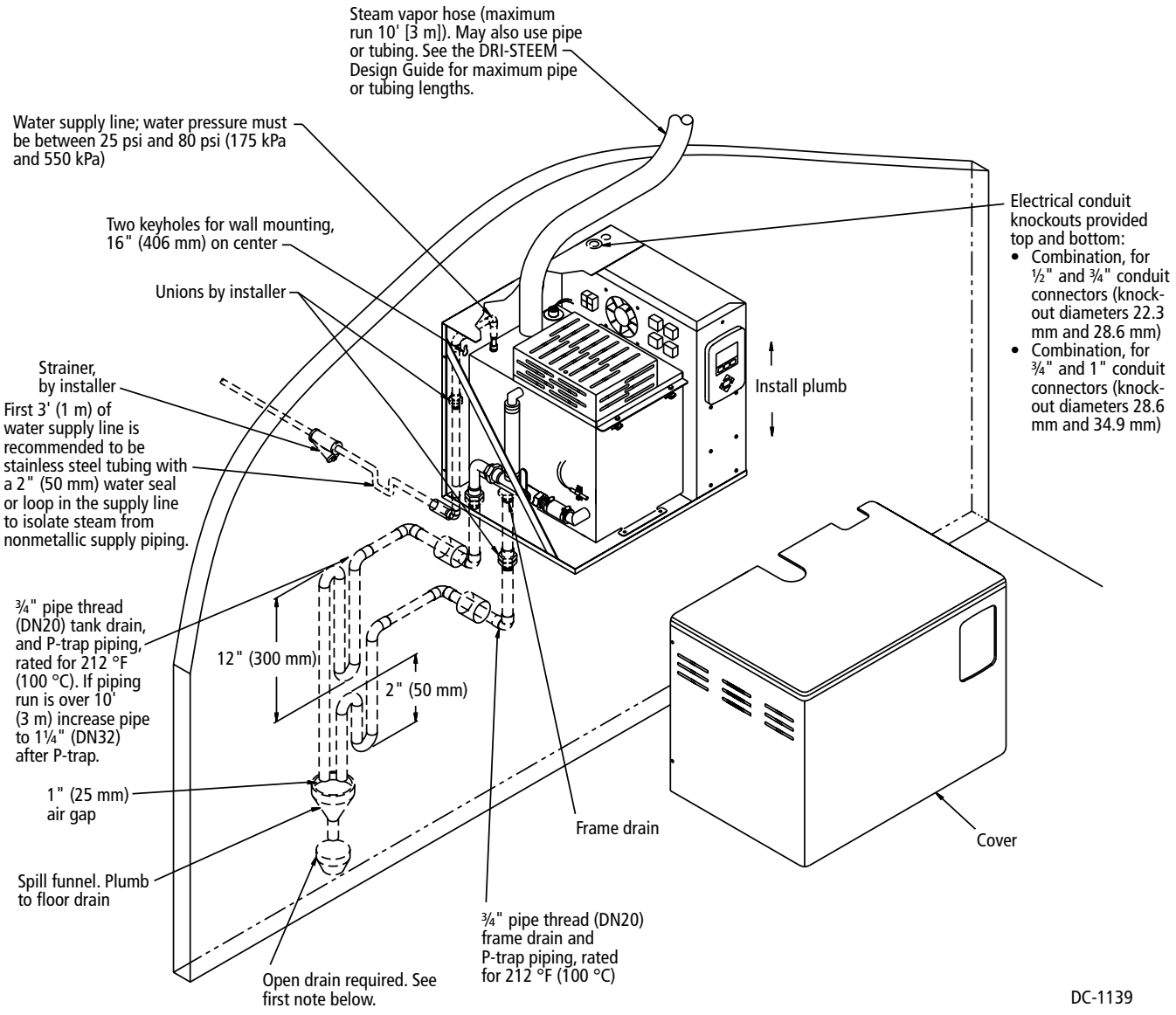

Steam vapor hose (maximum run 10' [3 m]). May also use pipe or tubing. See the DRI-STEEM Design Guide for maximum pipe or tubing lengths.
Water supply line; water pressure must be between 25 psi and 80 psi (175 kPa and 550 kPa); water conductivity minimum 100 µS/cm. If water piping to humidifier is nonmetallic, we recommend that the first 3' (1 m) of water supply piping from the humidifier be metallic
Two keyholes for wall mounting, 16" (406 mm) on center
Water supply line
Unions by installer
2" (50 mm) water seal or loop in the supply line to isolate steam from nonmetallic supply piping
Shock arrester recommended to reduce water hammer
¾" pipe thread (DN20) tank drain, skimmer and P-trap piping, rated for 212 °F (100 °C). If piping run is over 10' (3 m) increase pipe to 1¼" (DN32) after P-trap.
12" (300 mm)
2" (50 mm)
1" (25 mm) air gap
Spill funnel. Plumb to floor drain.
Open drain required. See first note below.
¾" pipe thread (DN20) frame drain and P-trap piping, rated for 212 °F (100 °C)
Frame drain
Install plumb
Electrical conduit knockouts provided top and bottom:
• Combination, for ½" and ¾" conduit connectors (knock-out diameters 22.3 mm and 28.6 mm)
• Combination, for ¾" and 1" conduit connectors (knock-out diameters 28.6 mm and 34.9 mm)
Cover
DC-1136

Notes:

- Locate air gap only in spaces with adequate temperature and air movement to absorb flash steam; otherwise, condensation may form on nearby surfaces. Refer to governing codes for drain pipe size and maximum discharge water temperature.
- Offset humidifier from spill funnel or floor drain to prevent flash steam from rising into the cabinet.
- Dashed lines indicate provided by installer.
- The water supply inlet is more than 1" (25 mm) above the skim/overflow port, eliminating the possibility of backflow or siphoning from the tank. No additional backflow prevention is required; however, governing codes prevail.
- Install a union in the water supply and drain lines as shown to allow tank removal.
- Damage caused by chloride corrosion is not covered by your DRI-STEEM warranty.
- See the next page for recommended piping for Vapormist-DI models (models that use DI/RO water).
- See the dispersion section of this manual for more information about piping that connects the humidifier to the dispersion assembly.

Vapormist piping, DI/RO water models

Figure 15-1:
Vapormist-DI (deionized/reverse osmosis water models) field piping overview


Steam vapor hose (maximum run 10' [3 m]). May also use pipe or tubing. See the DRI-STEEM Design Guide for maximum pipe or tubing lengths.
Water supply line; water pressure must be between 25 psi and 80 psi (175 kPa and 550 kPa)
Two keyholes for wall mounting, 16" (406 mm) on center
Unions by installer
Strainer, by installer
First 3' (1 m) of water supply line is recommended to be stainless steel tubing with a 2" (50 mm) water seal or loop in the supply line to isolate steam from nonmetallic supply piping.
¾" pipe thread (DN20) tank drain, and P-trap piping, rated for 212 °F (100 °C). If piping run is over 10' (3 m) increase pipe to 1¼" (DN32) after P-trap.
12" (300 mm)
2" (50 mm)
1" (25 mm) air gap
Spill funnel. Plumb to floor drain
Open drain required. See first note below.
¾" pipe thread (DN20) frame drain and P-trap piping, rated for 212 °F (100 °C)
Frame drain
Install plumb
Electrical conduit knockouts provided top and bottom:
• Combination, for ½" and ¾" conduit connectors (knock-out diameters 22.3 mm and 28.6 mm)
• Combination, for ¾" and 1" conduit connectors (knock-out diameters 28.6 mm and 34.9 mm)
Cover
DC-1139

Notes:

- Locate air gap only in spaces with adequate temperature and air movement to absorb flash steam; otherwise, condensation may form on nearby surfaces. Refer to governing codes for drain pipe size and maximum discharge water temperature.
- Offset humidifier from spill funnel or floor drain to prevent flash steam from rising into the cabinet.
- Dashed lines indicate provided by installer.
- The water supply inlet is more than 1" (25 mm) above the overflow port, eliminating the possibility of backflow or siphoning from the tank. No additional backflow prevention is required; however, governing codes prevail.
- Install a union in the water supply and drain lines as shown to allow tank removal.
- Damage caused by chloride corrosion is not covered by our DRI-STEEM warranty.
- See the previous page for recommended piping for Vapormist standard water models.
- See the dispersion section of this manual for more information about piping that connects the humidifier to the dispersion assembly.

Calculating non-wetting distances

Notes:

- Final equipment selection should account for condensate loss. See the DRI-STEEM Design Guide for steam loss tables.
- Dispersion assembly should accommodate maximum output capacity of humidifier.

Sample exercise

To learn more about how to specify a dispersion unit based on non-wetting distance, read the sample problem below. For purposes of this sample problem, assume you have chosen to use Ultra-sorb units because you want pre-assembled panels.

Assume the air entering the dispersion assembly is 20% RH and the air leaving the zone of humidification needs to be 70% RH. Design for a non-wetting distance of 24" (610 mm) maximum.

Solution

Refer to the graph on Page 17: Ultra-sorb non-wetting distances. Find 20% entering RH. Proceed vertically until you intersect the 70% leaving RH line. Draw a line horizontally from that point to the right to see that for 24" (610 mm) of non-wetting distance, 6" (152 mm) tube spacing would be the closest match.

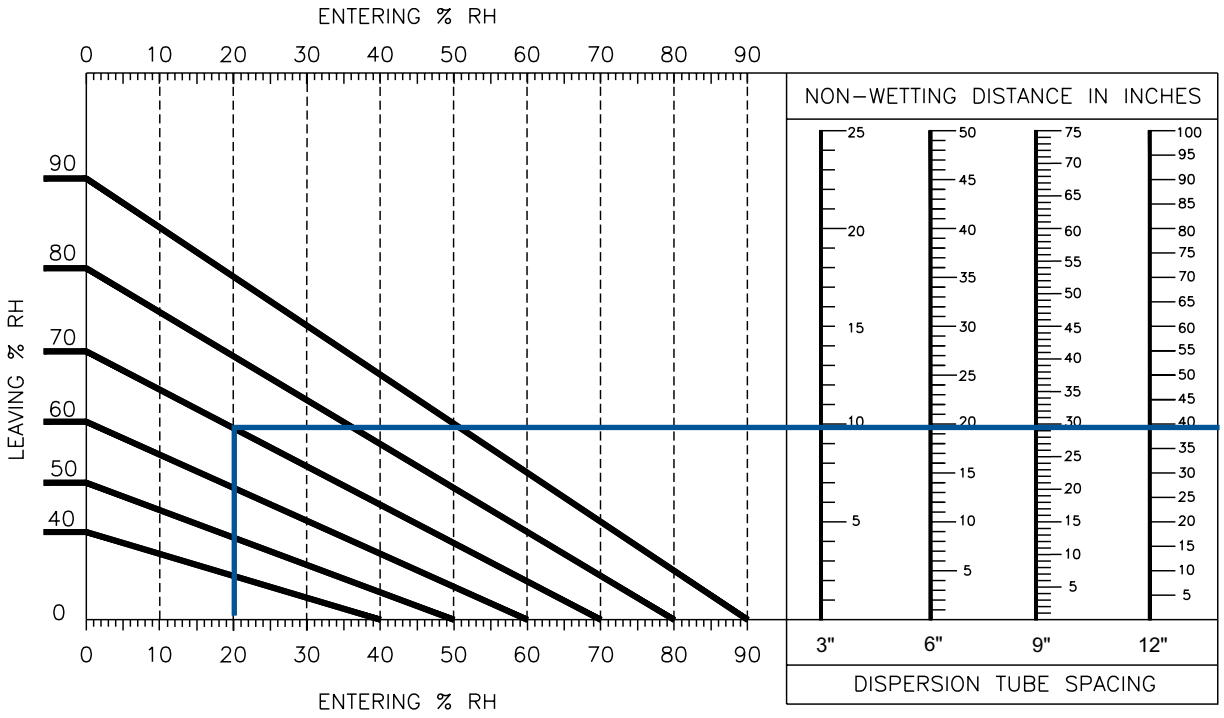
Verify capacity

From Table 17-1: Ultra-sorb tube spacing and capacity on Page 17, note that for 6" (152 mm) spacing, maximum capacity is 18 lbs/hr/ft^2 (88 kg/h/m^2). Multiply this value by the active face area of the Ultra-sorb to determine if the unit will produce adequate output capacity. If the capacity is inadequate, go to the next smaller tube spacing.

Steam absorption considerations

1. Non-wetting distance is the dimension downstream from the leaving side of the steam dispersion assembly to the point where wetting will not occur, although wisps of steam may be present. Solid objects at duct air temperature, such as coils, dampers, fans, etc., downstream of this dimension will remain dry.
2. **CAUTION!** Non-wetting distances described in this catalog do not apply when installing a steam dispersion assembly upstream of filter media. If you need to install a steam dispersion assembly upstream of filter media, consult your representative or DRI-STEEM directly for special recommendations.
3. Note that the rise (Δ) in RH (the difference between entering and leaving RH) has a direct bearing on the non-wetting distance. As the rise increases, more vapor needs to be dispersed into the air, and thus the non-wetting distance increases.
4. Uneven airflow over the cross-section of a dispersion assembly can result in nonuniform mixing of steam with air which, in turn, will adversely affect the non-wetting distance.

Figure 17-1:
Ultra-sorb non-wetting distances



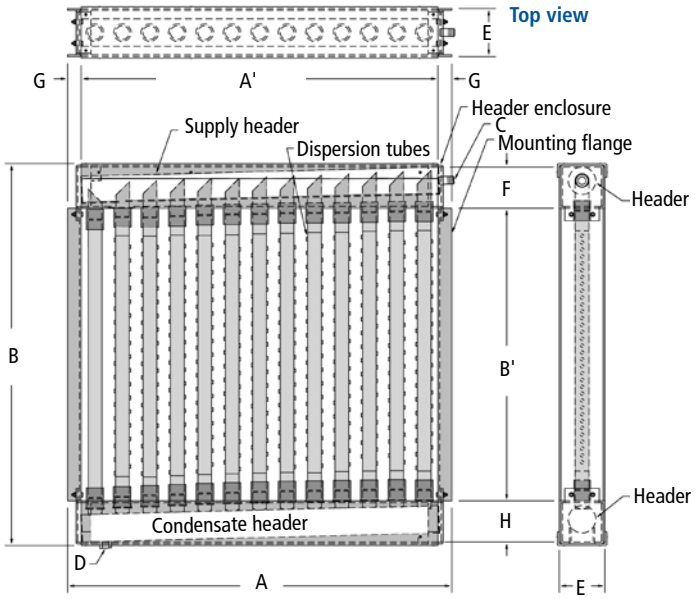
Note:
The above non-wetting data applies to all air velocities up to 2,000 fpm (10.2 m/s), and is based on air leaving the zone of humidification at conditions of 55 °F (13 °C) and the stated % RH. The blue lines in the graph refer to the sample exercise described on Page 16.

Table 17-1:
Ultra-sorb tube spacing and capacity

Tube spacing		Maximum capacity	
inches	mm	lbs/hr/ft²	kg/h/m²
3	76	36	175
6	152	18	88
9	229	12	59
12	305	9	44

Note:
The above steam flow capacity data is based on pounds (kg) of steam per hour per square foot (meter) of face area, exclusive of headers, at various tube spacings.

Figure 18-1:
Ultra-sorb Model LV dimensions



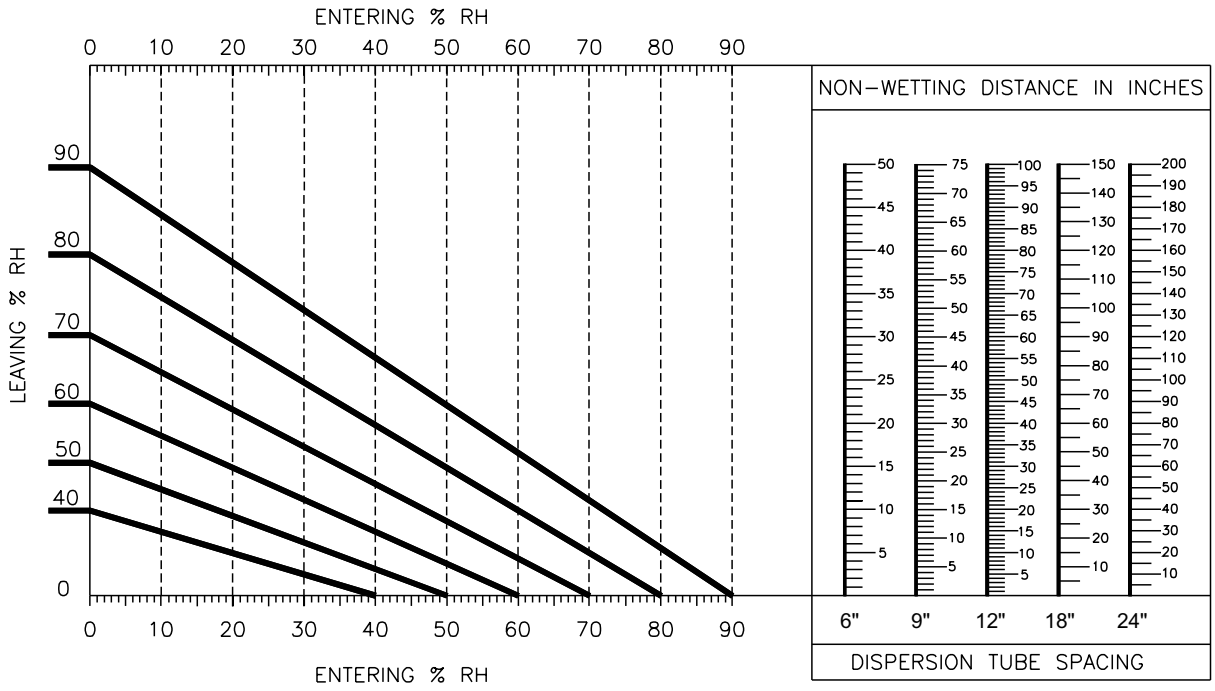
OM-123us

Table 18-1:
Ultra-sorb Model LV dimensions

Dimension	Description	Inches (mm)
A	Overall width	15" (381) minimum to 147" (3734) maximum in 1" (25) increments
A'	Face width	12" (305) minimum to 144" (3658) maximum in 1" (25) increments
B	Overall height	21" (533) minimum to 156" (3962) maximum in 1" (25) increments
B'	Face height	12" (305) minimum to 144" (3658) maximum in 1" (25) increments
C	Steam inlet diameter	Determined by maximum capacity
D	Condensate drain	¾" pipe thread (DN20)
E	Header enclosure (front to back)	For 3" (76) and 4" (102) headers, E = 5" (127); for 5" (127) header, E = 6" (152); for 6" (152) header, E = 7" (178)
F	Header enclosure (top to bottom)	For 3" (76) header F = 4.5" (114); for 4" (102) header, F = 5.5" (140); for 5" (127) header, F = 6.5" (165); for 6" (152) header F = 7.5" (191)
G	Flange	1.5" (38)
H	Condensate header enclosure	4.5" (114)

Notes:
- Header diameter varies with capacity.

Figure 19-1:
Rapid-sorb non-wetting distances



Note:
The above non-wetting data applies to all air velocities up to 2,000 fpm (10.2 m/s), and is based on air leaving the zone of humidification at conditions of 55 °F (13 °C) and the stated % RH.

Table 19-1:
Rapid-sorb header capacities

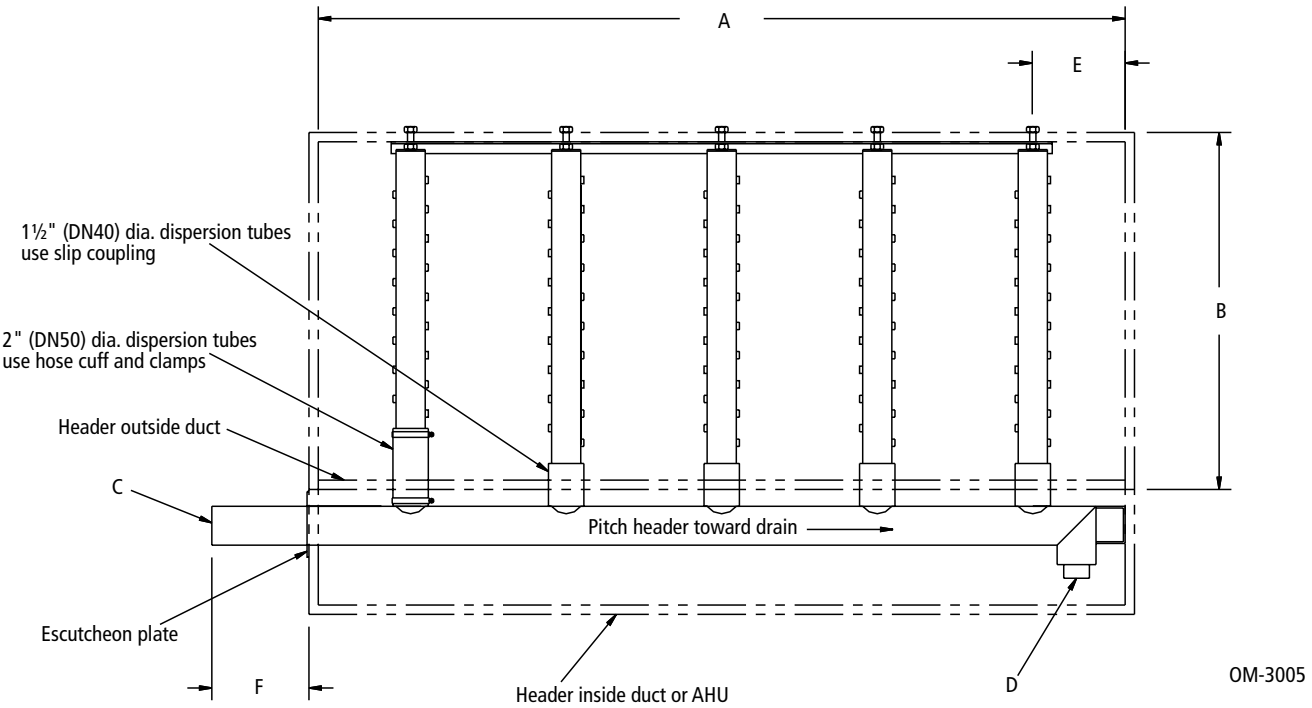
Header capacity		Header diameter	
lbs/hr	kg/h	inches	DN
≤250	≤113	2	50
251-500	114-227	3	80
501-800	228-363	4	100

Table 19-2:
Rapid-sorb dispersion tube capacities*

Tube capacity		Tube diameter	
lbs/hr	kg/h	inches	DN
≤35	≤16	1½	40
36-70	17-32	2	50

Note:
* If duct height is <15" (381 mm), tube quantities may need to increase to compensate for reduced capacity of short tubes. Consult DRI-STEEM or see Dri-calc for the correct calculation.

Figure 20-1:
Rapid-sorb dimensions



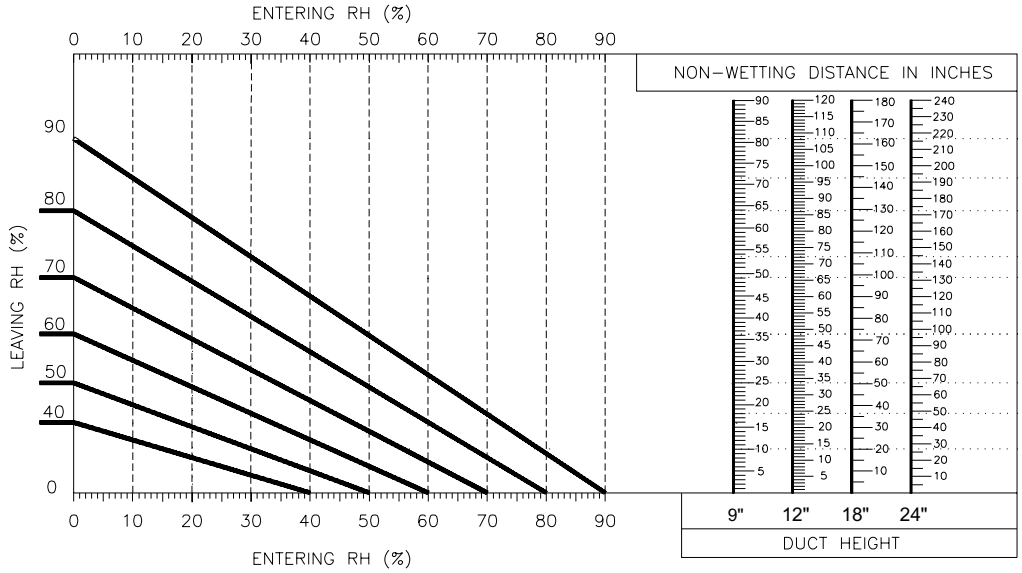
Note:
Add water seal to condensate drain as shown in the Dri-calc Installation Guides or the Vapormist Installation, Operation and Maintenance manual.

Table 20-1:
Rapid-sorb dimensions

Dimension	Description	Inches (mm)
A	Face width	12" (305) minimum to 120" (3048) maximum in 1" (25) increments
B	Face height	12" (305) minimum to 120" (3048) maximum in 1" (25) increments
C	Steam inlet	Determined by supply steam pressure
D	Condensate drain	¾" pipe thread (DN20)
E	Distance from tube center to inside of duct or AHU wall	4.5" (114) minimum
F	Distance from outside of duct or AHU wall to end of Rapid-sorb leader	4.5" (114) minimum

Note:
All Rapid-sorb units are custom-sized and field-assembled to fit the duct or air handler. Consult DRI-STEEM for sizes larger or smaller than those listed above.

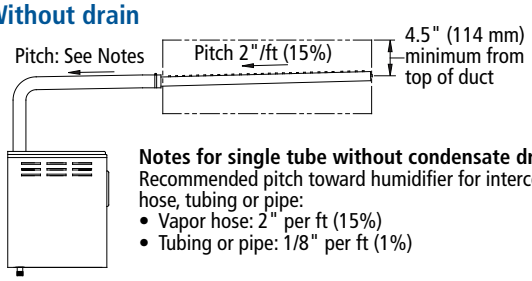
Figure 21-1: Single tube non-wetting distances


ENTERING RH (%)
0 10 20 30 40 50 60 70 80 90
LEAVING RH (%)
90 80 70 60 50 40 0
NON–WETTING DISTANCE IN INCHES
9" 12" 18" 24"
DUCT HEIGHT
ENTERING RH (%)

Note:
The above non-wetting data applies to all air velocities up to 2,000 fpm (10.2 m/s), and is based on air leaving the zone of humidification at conditions of 55 °F (13 °C) and the stated % RH.

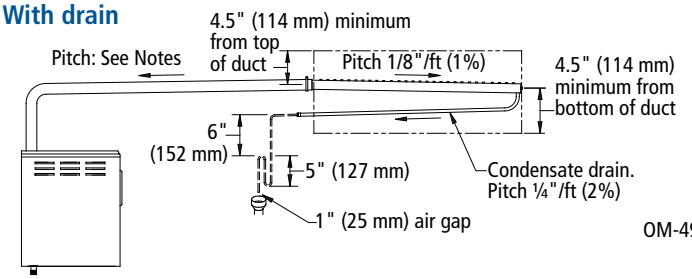
Figure 21-2: Single tube without and with condensate drain

Without drain



Notes for single tube without condensate drain:
Recommended pitch toward humidifier for interconnecting hose, tubing or pipe:
- Vapor hose: 2" per ft (15%)
- Tubing or pipe: 1/8" per ft (1%)

With drain


4.5" (114 mm) minimum from top of duct
Pitch: See Notes
Pitch 1/8"/ft (1%)
4.5" (114 mm) minimum from bottom of duct
6" (152 mm)
5" (127 mm)
Condensate drain. Pitch ¼"/ft (2%)
1" (25 mm) air gap
OM-496B

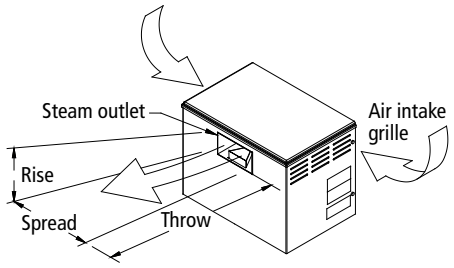
Notes for single tube with condensate drain:
Recommended pitch toward humidifier for interconnecting hose, tubing or pipe:
- Vapor hose: 2" per ft (15%)
- 1½" tubing or pipe: ½" per ft (5%)
- 2" tubing or pipe: ¼" per ft (2%)

Table 21-1: Single tube capacities

Tube size		Capacity			
		Without drain		With drain	
inches	DN	lbs/hr	kg/h	lbs/hr	kg/h
1½	40	28.4	13	56.8	25.8
2	50	56.8	25.8	85.2	38.6

Space Distribution Unit dispersion

Figure 22-1:
SDU-E rise, spread and throw



See also the Space Distribution Unit specifications table on Page 11.

As steam is discharged from the SDU-E, it quickly cools and turns to a visible fog that is lighter than air. As this fog is carried away from the SDU-E by the airstream, it tends to rise toward the ceiling. If this fog contacts solid surfaces (columns, beams, ceiling, pipes, etc.) before it disappears, it can collect and drip as water. The greater the space relative humidity, the more the fog will rise, throw and spread.

The table below lists the minimum rise, throw and spread non-wetting distances for SDU-E area-type humidifiers at 40%, 50% and 60% RH in the space. Surfaces cooler than ambient temperature, or objects located within this minimum dimension, can cause condensation and dripping. To avoid steam impingement on surrounding areas, observe the minimum non-wetting distances in the table below.

The SDU-E contains a 545 cfm (0.26 m^3/s) blower (120 V, single-phase, 60 Hz) and an airflow proving switch field-wired to the Vapormist humidifier electrical panel. A wiring diagram of the SDU-E is included with the unit.

On a call for humidity, the humidifier begins producing steam and the start relay energizes the SDU-E blower. When the call for humidity is satisfied, the Vapor-logic3 microprocessor keeps the blower running to disperse residual moisture using a time delay.

Table 22-1:
SDU-E minimum non-wetting distances

Model	40% RH @ 70 °F (21 °C)						50% RH @ 70 °F (21 °C)						60% RH @ 70 °F (21 °C)					
	Rise		Throw		Spread		Rise		Throw		Spread		Rise		Throw		Spread	
	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m
VM-2	1.0	0.3	5.0	1.5	1.0	0.3	1.5	0.5	6.5	2.0	1.5	0.5	2.5	0.8	7.5	2.3	2.5	0.8
VM-4	1.0	0.3	5.0	1.5	1.0	0.3	1.5	0.5	6.5	2.0	1.5	0.5	2.5	0.8	7.5	2.3	2.5	0.8
VM-6	1.0	0.3	5.0	1.5	1.0	0.3	1.5	0.5	6.5	2.0	1.5	0.5	2.5	0.8	7.5	2.3	2.5	0.8
VM-8	1.0	0.3	5.5	1.7	1.0	0.3	1.5	0.5	6.5	2.0	1.5	0.5	2.5	0.8	7.5	2.3	2.5	0.8
VM-10	1.5	0.5	6.0	1.8	1.5	0.5	2.0	0.6	7.0	2.1	2.0	0.6	3.0	1.0	8.0	2.5	3.0	1.0
VM-12	1.5	0.5	6.0	1.8	1.5	0.5	2.0	0.6	7.0	2.1	2.0	0.6	3.0	1.0	8.0	2.5	3.0	1.0
VM-14	2.0	0.6	7.0	2.1	2.0	0.6	2.0	0.6	7.0	2.1	2.0	0.6	3.0	1.0	9.0	2.7	3.0	1.0
VM-16	2.0	0.6	7.0	2.1	2.0	0.6	2.0	0.6	7.0	2.1	2.0	0.6	3.0	1.0	9.0	2.7	3.0	1.0
VM-21	2.0	0.6	7.5	2.3	2.0	0.6	2.5	0.8	10.0	3.0	2.5	0.8	3.0	1.0	12.0	3.7	3.0	1.0
VM-25	2.0	0.6	8.0	2.5	2.0	0.6	2.5	0.8	10.5	3.2	2.5	0.8	3.5	1.1	12.5	3.8	3.5	1.1
VM-30	2.0	0.6	8.0	2.5	2.0	0.6	2.5	0.8	10.5	3.2	2.5	0.8	3.5	1.1	12.5	3.8	3.5	1.1
VM-34	2.0	0.6	8.0	2.5	2.0	0.6	2.5	0.8	10.5	3.2	2.5	0.8	3.5	1.1	12.5	3.8	3.5	1.1

Notes:
Rise: Minimum non-wetting height above the steam outlet of the SDU-E
Throw: Minimum non-wetting horizontal distance from the steam outlet of the SDU-E.
Spread: Minimum non-wetting width from the steam outlet of the SDU-E.

Figure 23-1:
SDU-I mechanical detail

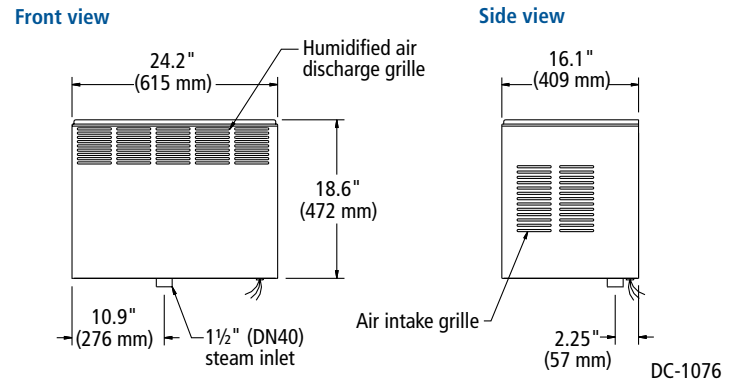
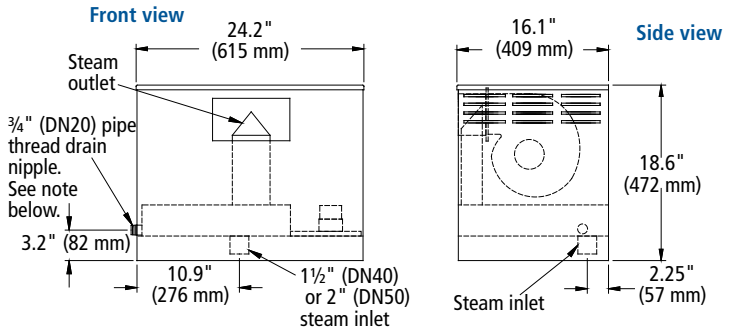


Figure 23-2:
SDU-E mechanical detail



Note: The SDU-E dispersion box requires an installed condensate drain line and water seal, provided by installer. See Figure 23-3.

Figure 23-3:
SDU-E drain line piping

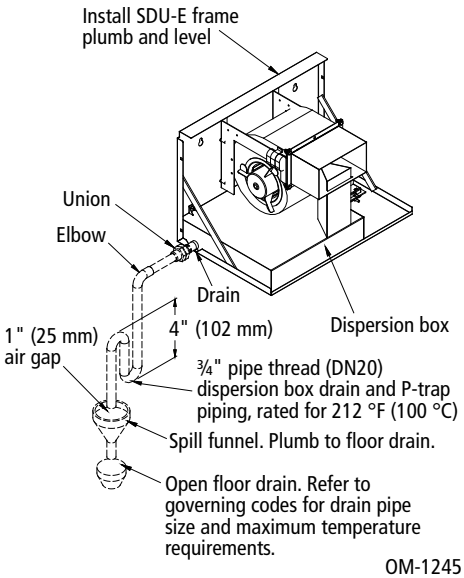


Table 23-1:
Hose kit sizing by model

Humidifier models	Hose kit (vapor hose, dispersion tube, and hardware)	Maximum capacity of dispersion tube	
		lbs/hr	kg/h
VM 2-8	1½" (DN40) hose kit without drain	28.4	12.9
VM 10-16	1½" (DN40) hose kit with drain	56.8	25.8
	2" (DN50) hose kit without drain	56.8	25.8
VM 21-25	2" (DN50) hose kit with drain	85.2	38.6
VM 30-34	These models require multiple tube assemblies and cannot use a hose kit.		

Vapormist accessories

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